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(54) Jack with a common support shaft

(57) A jack with a common support shaft comprises two shrouds (1), each having a penetrating hole (11); a swingable arm (2) with a rear end having penetrating holes (21), and a lower side having pivotal holes (22), a front end thereof being pivotally connected to a top disk seat (23) which is pivotally connected to one end of a stick (24), the end of the stick (24) being pivotally connected to the one of the shrouds (1), the pivotal holes (22) being arranged with a spindle (26) penetrating two pull rods (25) which are pivotally connected to a splindle transversal rod (32); a hydraulic cylinder (3) having a seat (31) and the spindle transversal rod (32); the seat (31) having a pump set (34); the spindle transversal rod (32) being pivotally connected to the pull rod (25) whereby the two shrouds (1), swingable arm (2), and hydraulic cylinder (3) of the jack are connected to the common support shaft; and thus, the hydraulic cylinder (3) is directly connected to the lower end of the swingable arm (2).

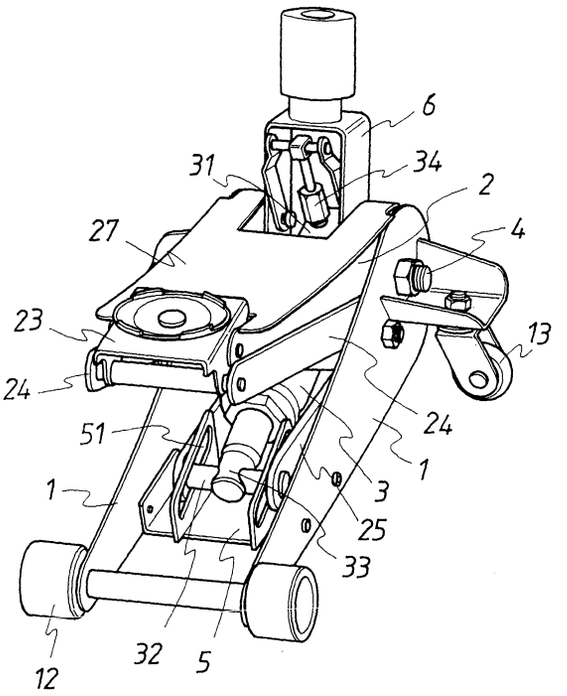

FIG.2

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Description

[0001] The present invention'relates to jacks, and particularly to a jack with a common support shaft, where the length of the jack is reduced to one half of the original one. Thereby, the material of the two shrouds 1 can be reduced to one half. That is to say that the volume of the jack is reduced and material is saved.

[0002] Referring to Fig. 7, a prior art jack is illustrated. Two shrouds 10 and swingable arm 20 are installed with a first supporting shaft 30. A spindle 401 at a front end of the hydraulic cylinder 40 is combined to the swingable arm 20 by a transversal shaft 402. The seat 402 at a rear end of the hydraulic cylinder 40 is installed with a second supporting shaft 50 locking the two shrouds 10 of the jack. When the hydraulic cylinder 40 moves. the spindle 401 protrudes out to lift the swingable arm 20 upwards. In this prior art. the second supporting shaft 30 is positioned at a center of the jack. Two sides of the first supporting shaft 30 are installed with the swingable arm 20 and the hydraulic cylinder 40. Therefore the length of the seat of the prior art jack includes the length of the swingable arm 20 and the hydraulic cylinder 40. The two shrouds 10 must extend to cover the swingable arm 20 and hydraulic cylinder 40. Thus. the volume is large and length is longer. Thus the material of the two shrouds 10 can not be reduced.

[0003] A jack with a common support shaft comprises two shrouds: each shroud having a penetrating hole at a selected position; a swingable arm; a rear end thereof having a set of penetrating holes, and a lower side thereof having a set of pivotal holes; another end of the stick being pivotally installed to the two shrouds; the pivotal holes being arranged with a spindle penetrating the two pull rods; front ends of the pull rods being pivotally installed to a spindle transversal rod; a hydraulic cylinder, a rear end of the hydraulic cylinder being a seat and a front end thereof being the spindle transversal rod; a predetermined position of the seat having a pump set; the spindle transversal rod being pivotally combined to the pull rod. By above mentioned structure, the two shrouds, swingable arm. and hydraulic cylinder of the jack are combined to the common support shaft; and thus, the hydraulic cylinder is directly installed at a lower side of the swingable arm.

[0004] The present invention will be more readily understood from the following detailed description when read in conjunction with the appended drawing.

[0005] Fig. 1 is an assembled perspective view showing that the present invention is in a static state.

[0006] Fig. 2 is an assembled perspective view showing that the present invention is in lifting state.

[0007] Fig. 3 is an exploded perspective view of the present invention.

[0008] Fig. 4 is a cross section view of the present invention.

[0009] Fig. 5 is a longitudinal cross section view of the present invention in static state.

[0010] Fig. 6 is an assembled cross section view showing that the present invention is in a lifting state.

[0011] Fig. 7 is an assembled schematic view of a prior art jack,

[0012] With reference to Figs. 1 to 3, thejack with a common support shaft of the present invention is illustrated. The jack has two shrouds 1, a swingable arm 2, and a seat 31 of hydraulic cylinder 3 which is corresponding to the penetrating holes 11, 21 and 311 and a common support shaft 4 serves to connect these elements.

[0013] A distal end of each of the shroud 1 has a penetrating hole 11. A front end and a rear end thereof are formed with a front wheel 12 and a rear wheel 13. Other than the common support shaft 4 at the penetrating hole 11 of the shroud 1, a track seat 5 is locked between the two shrouds 1. The track seat 5 has two track slot 51.

[0014] An upper side at a rear end of the swingable arm 2 has a pair of penetrating holes 21 and a lower side has a pair of pivotal holes 22. The front end is pivotally combined with a top disk seat 23. The common support shaft 4 penetrates the penetrating hole 21. A top disk seat 23 is pivotally installed with a set of sticks 24. Another end of each stick 24 is pivotally combined to the two shrouds 1 (referring to Fig. 4). A lower pivotal hole 22 is firmly secured to a spindle 26 penetrating two pull rods 25. A front end of each pull rod 25 is pivotally installed to a spindle transversal rod 32 of the hydraulic cylinder 3. An upper end of the swingable arm 2 has a protecting cover 27.

[0015] A rear end of the hydraulic cylinder 3 has a seat 31. A front end thereof is a spindle transversal rod 32. The spindle transversal rod 32 penetrates through the spindle 33 of the hydraulic cylinder 3. The seat 31 is installed with a respective penetrating hole 311. The common support shaft 4 penetrates through the penetrating hole 311. A pump set 34 is installed at a predetermined position of the seat 31. Besides, the spindle transversal rod 32 is pivotally installed to the pull rod 25. The spindle transversal rod 32 is installed to the track groove 5 1 of the track seat.

[0016] By above components, the two shrouds 1, the swingable arm 2 and the seat 31 of the hydraulic cylinder 3 of the jack are combined by the common support shaft 4 so that the whole structure can be assembled easily. In this jack, the hydraulic cylinder 3 can be directly assembled to a lower side of the swingable arm 2. Thus the length of the jack can be (i.e.. the length of the two shrouds 1) reduced to one half of the original one. Thereby, the material of the two shrouds I can be reduced to one half. That is to say that the volume of the jack is reduced and material is saved.

[0017] In the seat 31 of the hydraulic cylinder 3. one side of the pump 34 has a handle base 6. A handle of the jack can be inserted into the base 6. In assembly, the handle base 6 can be penetrated by and combined with the common support shaft 4. as shown in the drawings. Another, it can be independently installed to one

side of the seat 31 without being used with the common support shaft 4. However all these arrangements are within the scope of the present invention.

[0018] In the present invention, a set of pull rods (referring to Fig. 5) is installed between the swingable arm 2 and the spindle transversal rod 32 ofthe hydraulic cylinder 3. When the hydraulic cylinder 3 is in lifting stage, i.e., the pump set 34 is supplied with oil, the spindle transversal rod 32 can protrude out of the sliding groove 51 for driving the pull rod 25 and the swingable arm 2 so as to complete the action of lifting (referring to Fig. 6). The track seat 5 between the two swingable arms 2 is mainly used to receive the spindle transversal rod 32 of the hydraulic cylinder 3 so that when the spindle transversal rod 32 is reduced, it can be guided steadily.

[0019] The present invention is thus described, it will be obvious that the same may be varied in many ways. Such variations are not to be regarded as a departure from the scope of the present invention, and all such modifications as would be obvious to one skilled in the art are intended to be included within the scope of the following claims. For example, the handle base 6 at one side of the pump set 34 has a pivotal hole 61 which can be penetrated by the common support shaft 4. or independently installed to one side of the hydraulic cylinder seat 31 (same as those described in the prior art) instead of being used with the common support shaft 4. It can be replaced as desired.

Claims

1. A jack with a common support shaft **characterised by**:

   two shrouds: each shroud having a penetrating hole at a selected position:

   a swingable arm; a rear end thereof having a set of penetrating holes, and a lower side thereof having a set of pivotal holes; a front end thereof being pivotally connected to a top disk seat; the top disk seat being pivotally installed to one end of stick; another end of the stick being pivotally installed to the two shrouds; the pivotal holes being arranged with a spindle penetrating the two pull rods; front ends of the pull rods being pivotally installed to a spindle transversal rod: and
   a hydraulic cylinder, a rear end of the hydraulic cylinder being a seat and a front end thereof being the spindle transversal rod: the spindle transversal rod penetrating the spindle of the hydraulic cylinder; the seat at the rear end thereof being formed with a corresponding penetrating hole; a predetermined position of the seat having a pump set; and the spindle transversal rod being pivotally combined to the pull rod;

   by above mentioned structure, the two shrouds, swingable arm, and hydraulic cylinder of thejack are combined to the common support shaft by penetrating holes thereof; thus, the hydraulic cylinder is directly installed at a lower side of the swingable arm.

2. The jack with a common support shaft as claimed in claim 1, wherein one side of the pump set is installed with a handle seat; the pivotal hole of the seat of the handle seat is used with the common support shaft.

3. The jack with a common support shaft as claimed in claim 1 or claim 2, wherein predetermined positions of the two shrouds are installed with a sliding seat, and the spindle transversal rod is received in the track groove of the sliding seat.

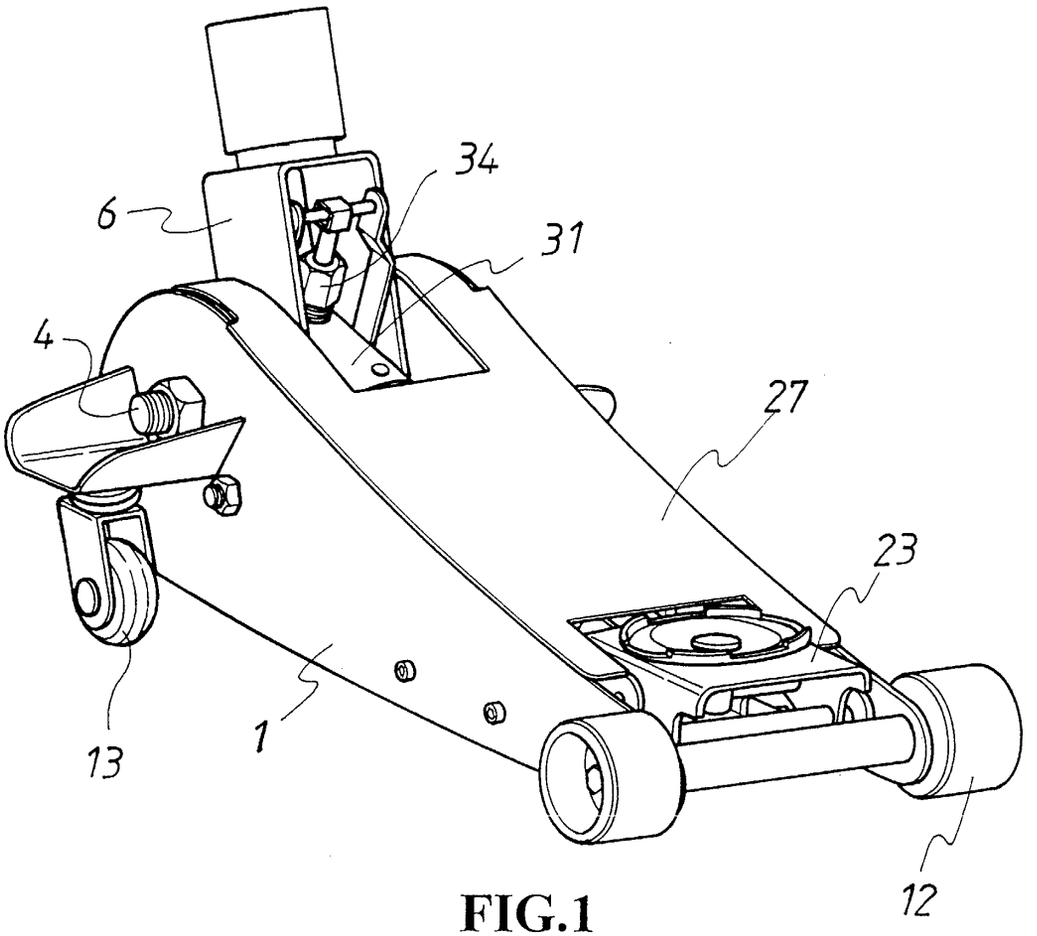

FIG.1

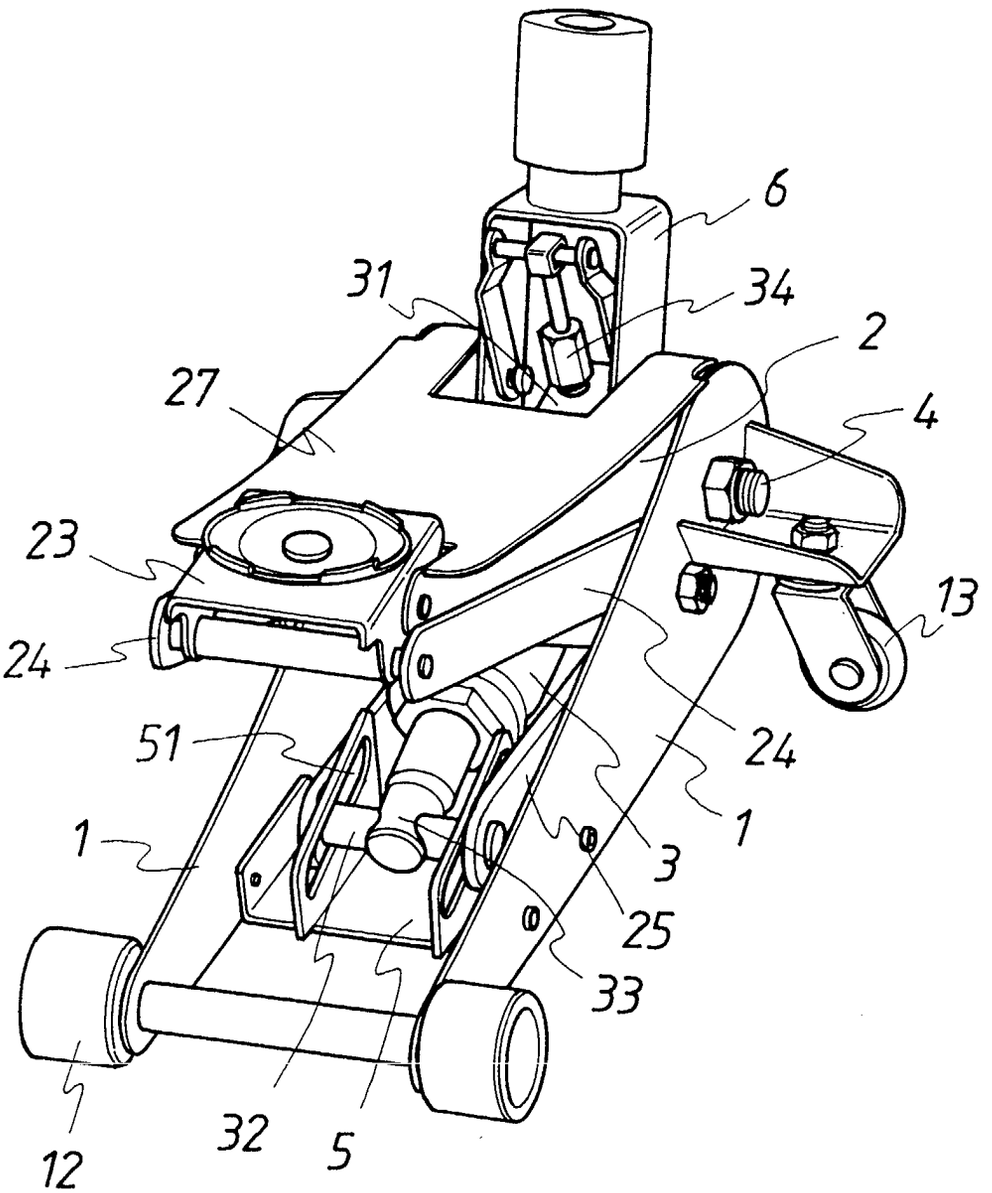

FIG.2

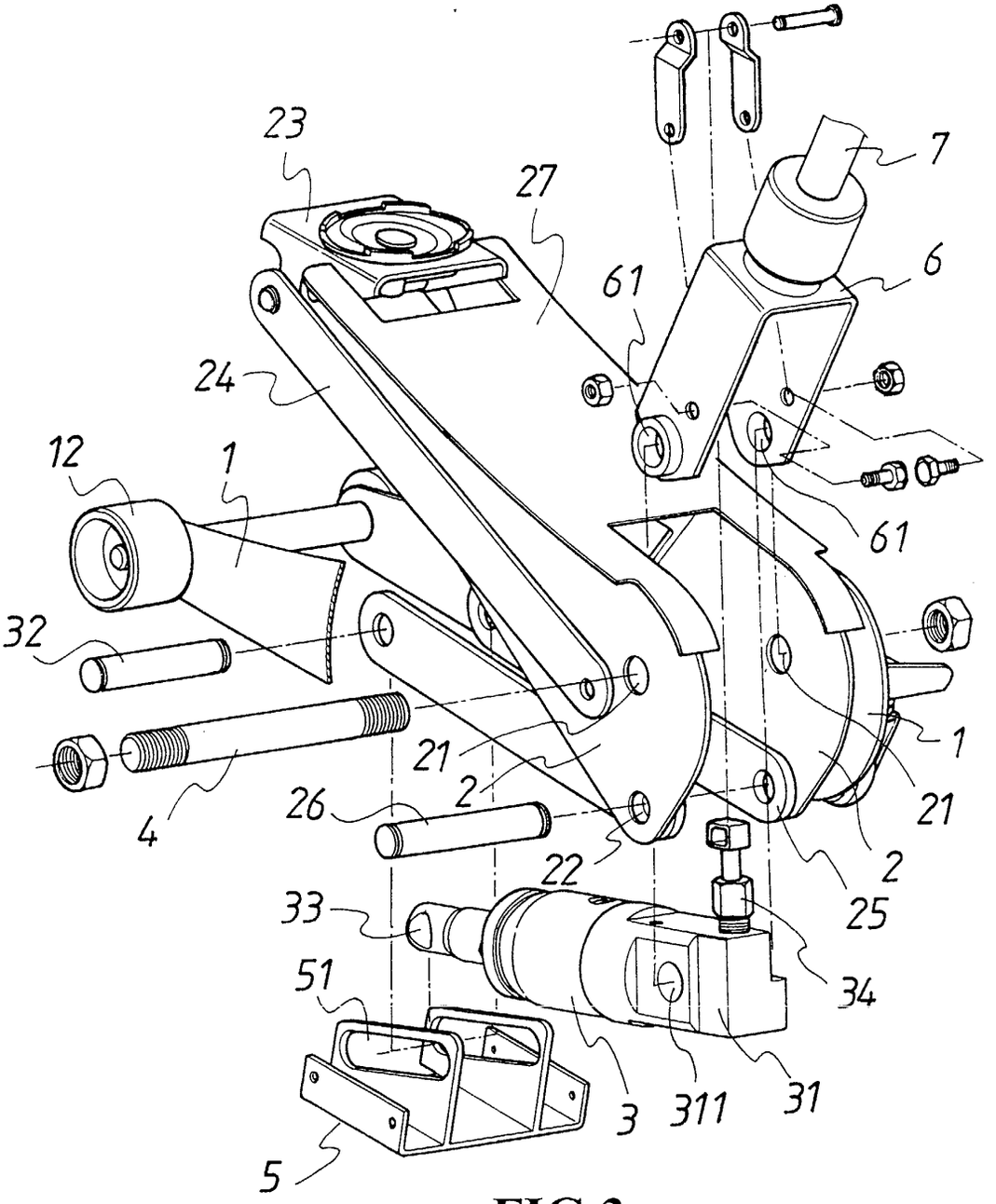

FIG.3

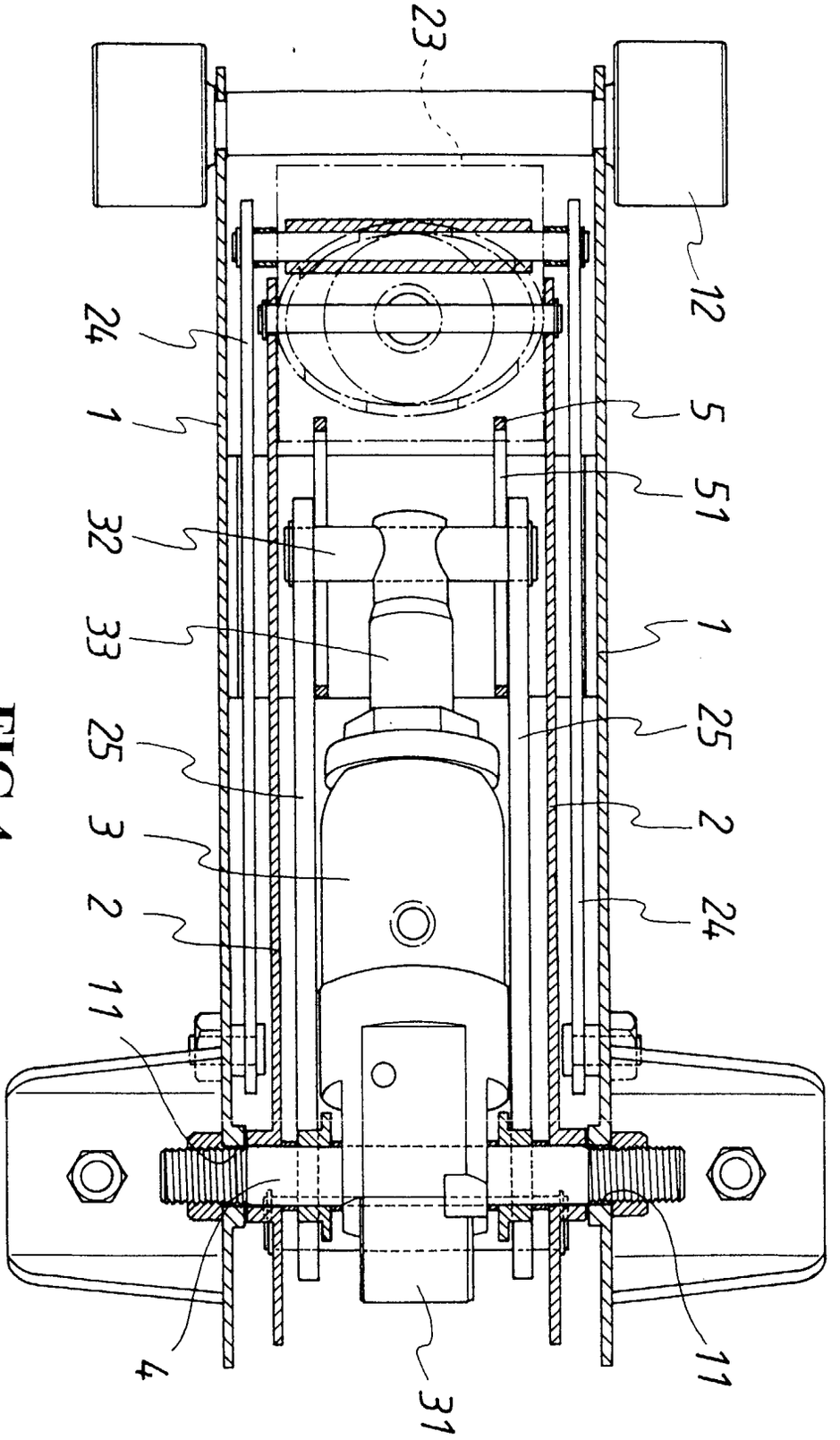

FIG.4

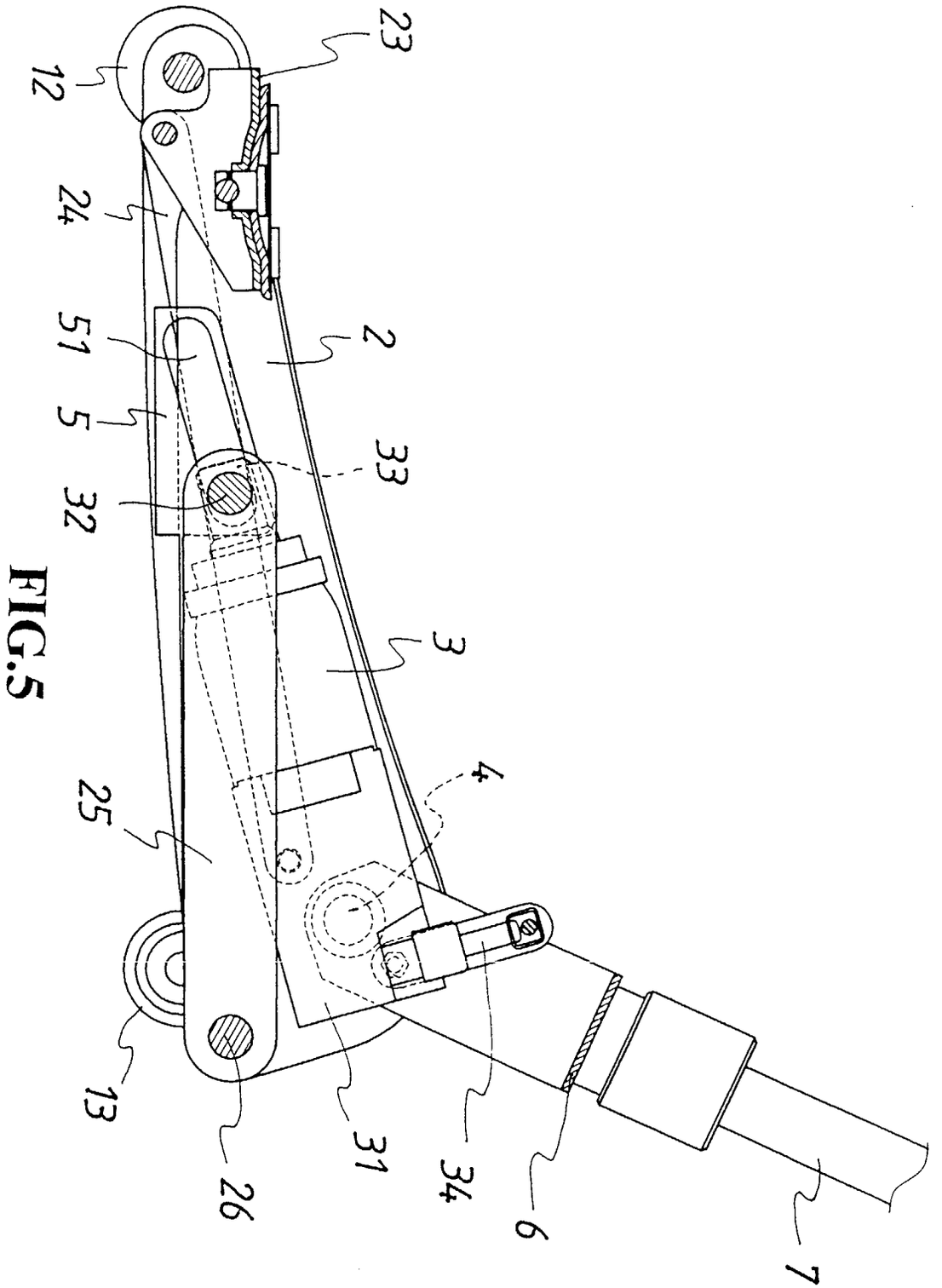

FIG.5

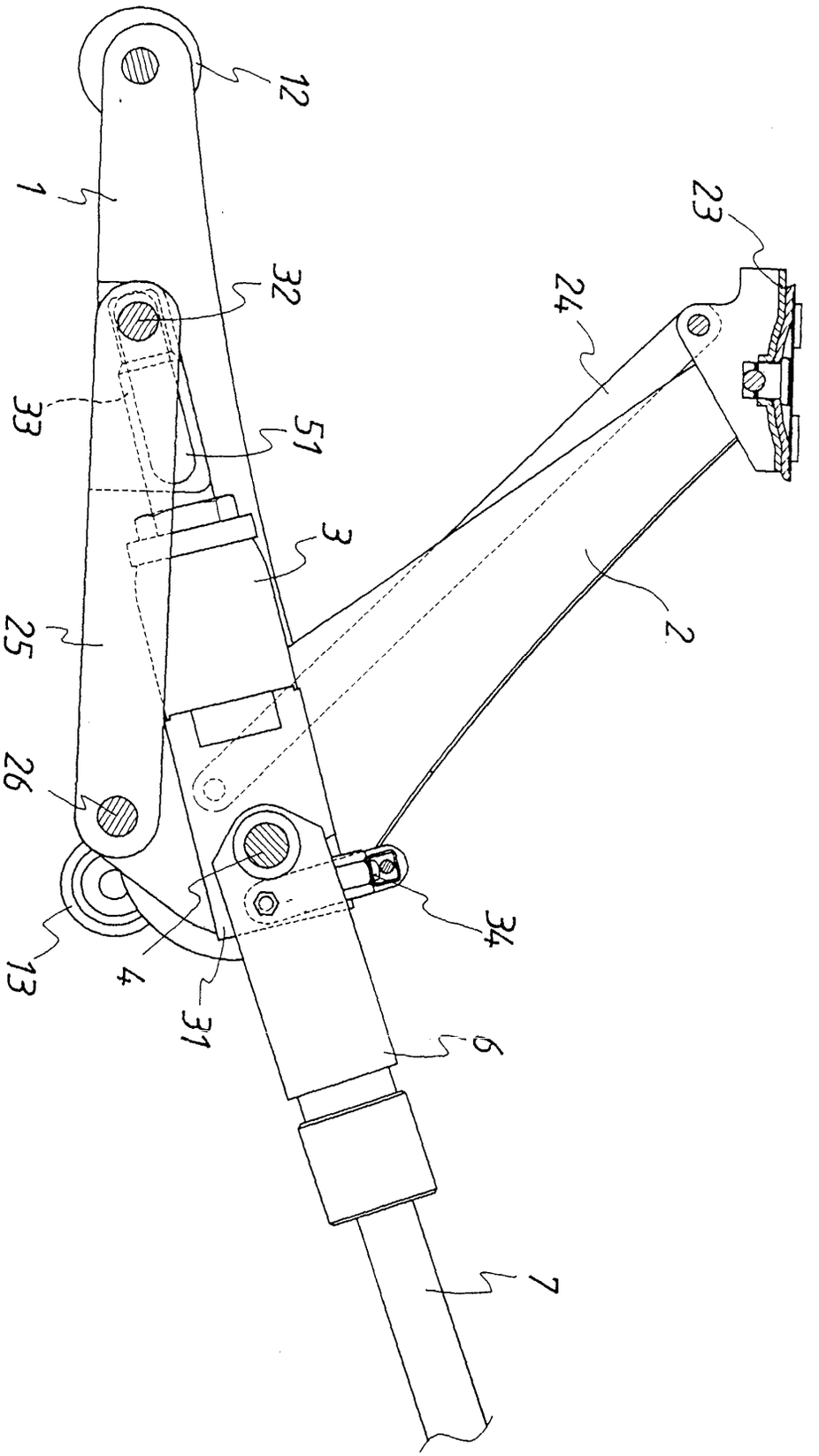

FIG.6

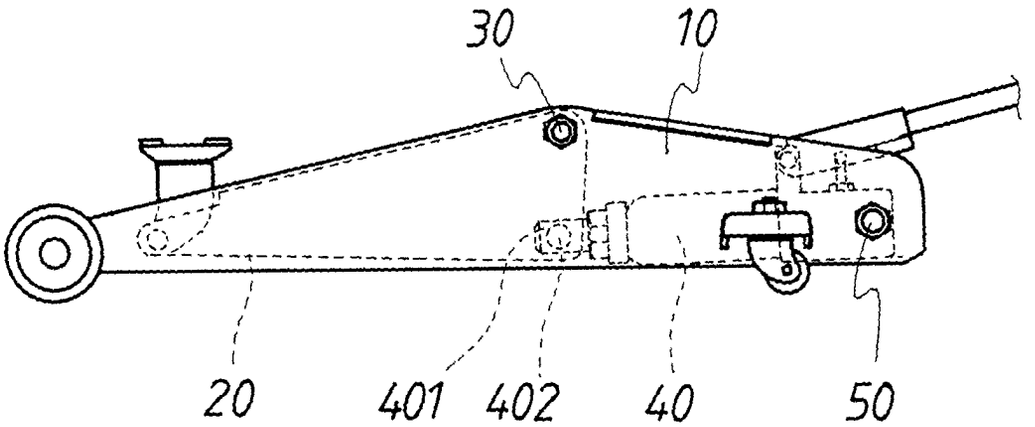

FIG.7

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EUROPEAN SEARCH REPORT

Application Number
EP 03 25 3534

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	US 4 850 568 A (HUNG MICHAEL) 25 July 1989 (1989-07-25) * column 2, line 14 - line 26 * * figure 1 *	1-3	B66F5/04
A	PATENT ABSTRACTS OF JAPAN vol. 1996, no. 09, 30 September 1996 (1996-09-30) -& JP 08 113118 A (HINO MOTORS LTD), 7 May 1996 (1996-05-07) * abstract * * figures 1,3 *	1	
A	US 4 596 378 A (LIANG SHU C ET AL) 24 June 1986 (1986-06-24) * abstract *	1	
A	US 4 277 048 A (OKUDA GENZABURO) 7 July 1981 (1981-07-07) * abstract *	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			B66F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	5 November 2003	Sheppard, B

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05-11-2003

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